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True, I have not set forth at Large the Excellent nature and Quality thereof, nor can that so be done by Pen or Tongue of Men or Angels.
(John Bunyan, The Water of Life*)*

George MacDonald's *Gutta Percha Willie* was first published in book form in 1873, although it had appeared in serial form in *Good Words for the Young* in 1872, when MacDonald was editing this journal. He had published a boy's adventure story, *Ranald Bannerman's Boyhood* in 1871, but otherwise his writing for children up to that time had been confined to his very successful modem fairy tales, particularly *At the Back of the North Wind* (1871) and *The Princess and the Goblin* (1872), both first published in *Good Words for the Young.*

For his story of Willie, who wants to participate in the "general business of the world" (51), MacDonald again turns towards a more conventional tale, in which the reader waits in vain for the approach of supernatural beings. He endeavours to make do without much help from the fantasy approach, just as in his "realistic" novels for adults. The book could be said to be use equivalent in his repertoire for children of his adult novel *Robert Falconer*—a novel of development which ends with the hero loving his neighbour more than himself. To write a work of this sort which does not adopt the form of a traditional book of instruction for children demands a measure of wonder, and the reader too must have an aptitude for wonder: "There are people who the more they understand, wonder the less; but such are not growing straight; they are growing crooked" (37). These lines lie programatically at the beginning of the story suggesting a maxim for growing up. During the course of the story it is the constant questioning, wondering, and posing of questions which finally makes Willie Macmichael a renowned medical practitioner.

As in MacDonald's earlier children's books, there is a wise advising grandmother figure who sits at the spinning wheel telling her story "with the

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needle and thread of her imagination" (11). As with Irene's grandmother in *The Princess and the Goblin,* the reader does not discover the content of most of Mrs Wilson's tales, and she does not directly interfere with the plot. But one tale which is very different from her usual fine stories is summarised and, as a consequence of Willie's righteous indignation at this tale, Mrs Wilson is obliged to teach Willie how to knit, which, metaphorically, allows him to take up the threads of imagination himself.

At first sight the story seems to be very simply structured: Willie—always whole-heartedly friendly and keen to help—acquires the most varied skills in order to be useful and find his place in society. To begin with, from the already mentioned knitting, through making shoes and smithying, he extends his craft-skills to the construction of a water wheel, watering systems and a tree house. Ultimately, through chemical experiments and physiological healing, he becomes a renowned doctor. Nevertheless, this apparently simple plot-structure proves to be varied and complex. **[end of page 9]** The book invites the reader to a way of observing that goes beyond the literal Victorian imagination to encompass the scientific and technological imagination. The latter imagination especially is brought into connections with other aspects of MacDonald's thinking. MacDonald potentises his fantasy romances, children's books and novels in such obscure symbolic ways that it has been difficult for. critics hitherto to decode all their signs, especially cine of his favourites—water. He was attracted all his life to its enlivening wetness. Water thus takes central place in the present study, where some extraordinary physio-chemical properties of water will be examined. MacDonald's scientific bent can be followed right into the laboratory of Justus von Liebig, and how it manifests in *Gutta Percha Willie* will be shown. A further section shows how, in the Victorian context, water was given a special, primarily religious role, and how this found its way into literature. The last two sections witness to the healing effect of water and to the mechanical component of this source of energy and life.

1. Streams of Life

I am a bubble upon thy ever moving, restless sea.
(Line of verse written by MacDonald at Broadlands, 1877)

MacDonald grew up in Huntly, a small town in Aberdeenshire on the rivers Deveron and Bogie. The latter river had "no small share in inspiring the lads of Strathbogie" (Greville MacDonald 20). MacDonald at one period wished to become a sailor, writing to his father that "the sea is my delight"

(qtd. in Greville 66). Water—the rivers and the sea—belong to the childhood loves which continued to provide him with joy his whole life long. In *Annals of a Quiet Neighbourhood* his hero calls these "infantile predilections" and observes: "I never get rid of [them], and to have once enjoyed making a mud bridge was to enjoy all bridges for ever" (9).

Through the eternally flowing water, MacDonald believes he is nearer to the spirit of love in a religious sense, and, moreover, to participating in eternal life and in the eternal goodness of the Creator. These thoughts are revealed in lines from a poem which he gave as his wedding present to his wife Louisa in 1851, and subsequently included in *Within and Without.*

> Love me beloved: for both must lie
> Under the earth and beneath the sky;
> The world be the same when we are gone;
> The leaves and the waters all sound on;
> The sea, the lordly, the gentle sea,
> Tell the same talcs to others than thee;
> And thou shalt be mine, my spirit's bride
> In the ceaseless flow of eternity's tide.
> (*Poetical Works* Bk. 1: 79)

MacDonald was advised to visit the seaside often because of his lung diseases, and he testifies to the strengthening effect of the water and sea air in several letters to his family. In 1880 the family moved to Bordighera on the Italian Riviera for the sake of **[10]** his health and that of some of his children. He spent every winter there until 1904 when, two years after his wife's death, he returned to England where he died in 1905.

2. The Miracle of Water

Given MacDonald's strong connection with the sea and the positive effect of water upon his health, it is not surprising that Willie Macmichael uses the healing power of water for his patients. But what is it about water from its physio-chemical aspect which makes it such a remarkable substance and causes it to inspire a writer like MacDonald? Thales of Milet believed that water is the primal substance, out of which everything arises and in which everything ends. He knew 2500 years ago that it is the only substance found in nature in all three states: solid, liquid and gaseous. The water molecule consists of two atoms of hydrogen and one of oxygen—H2O. Consequently its structure is similar to Tellurium hydride, H2Te; Selenium hydride, H2Se; and Hydrogen sulphide H2S. One would expect the densest

of these four, Tellurium hydride, with a molecular weight of 129, to have the highest boiling and freezing points. But it boils at -4 deg. C and freezes at -51 deg. C. As might be estimated from this, Selenium hydride, with a molecular weight of .34, boils at -61 deg. C and freezes at -82 deg. C. Yet water, with a molecular weight of only 18—which should boil at around -80 deg. C and freeze at around -100 deg. C—actually boils at 100 deg. C and freezes at 0 deg. C. Thus it can appear naturally in all three states.

Still more astonishing is the fact that frozen water floats. The general rule states that a substance, regardless of its state, reduces its volume (i.e. contracts) as it cools. Water follows this rule down to 4 deg. C. Yet then the density steadily reduces till 0 deg. C is reached where the expansion leads abruptly and drastically to freezing point with an increase in the volume of about 9%. Burst pipes and road potholes are a well known consequence of this phenomenon. But if water froze from below upwards, aquatic life could not exist.

Water is also unique in its high specific heat—the amount of heat required to warm a given mass of a substance by a given amount. It can dissolve a remarkable number of other substances. Its power of hydration—the ability to bind other substances to itself—is also remarkable. A moment's reflection will show how crucial all these unique properties are to the existence of life.

MacDonald studied natural science at Aberdeen University. It was his wish in 1845 to travel to Gießen to continue his studies in chemistry there in the famous laboratory of Justus von Liebig, but financial circumstances prevented this.

Liebig's investigations demonstrated the take-up of chemical substances in plant growth, using his knowledge of osmosis (exmosis and endomosis), a process dependent on the properties of cohesion and adhesion of water. He not only recognised that plants have essential minimum mineral needs for growth, but he was able to synthesise these minerals—the NPK (Nitrogen, Phosphorous, Potassium) and other minerals of present-day artificial fertilisers. He first produced super-phosphate (a product of calcium sulphate, calcium phosphate and water) from ground-up bones, and this was already being used as a fertiliser by 1845. Through the intercessions of Alexander von Humboldt, Liebig was appointed to the chair of Chemistry at Gießen at the age of **[11]** twenty one. Initially it was his work on the cyanide dyes which made him famous, but he is now best known as the father of agricultural chemistry.

Although unable to study with Liebig, MacDonald was well acquainted with his work. This can be seen in *Gutta Percha Willie* and *Robert Falconer.* Even Liebig's early research on dyes is alluded to in *Gutta Percha Willie* where "sesquiferrocyanide of iron" (Berlin Blue) is mentioned (178). Parts of these two books are autobiographical. Although Robert Falconer at Aberdeen University does not explicitly pursue chemical studies, he first studies the classics and then the natural sciences in order eventually to train as a doctor. Willie achieves the same objective by different means, but, to judge from the syllabus he follows, also apparently attends Aberdeen University. Anyone interested in chemistry can form an idea of the nature of Willie's experiments in his home-made laboratory. His eight-year-old sister picks up names like *"phosphuretted hydrogen, metaphosphoric acid, sesquiferrocyanide of iron"* (178), all of which directly recall Liebig's discoveries.

MacDonald most likely had several scientists in mind as models for Willie, such as Francis Bacon, the scientific pioneer and anticipator of English empiricism, whose inductive method for the exploration of nature was taken up by Liebig. MacDonald suggests that Bacon was the inspirer of Willie's medical researches (200). He must have known Liebig's *Chemische Briefe* of 1844, because he adopts Liebig's attitude to the knowledge of nature and depicts his protagonists accordingly:

> Herein lies the divine in the origin of the Christian teaching, that we are indebted for the possession of truth—the right thinking of a sublime being who is above every world—not to the human path of empirical research but to a higher illumination. (*Chemische Briefe* 28)

In his *Unspoken Sermons* Vol. 3 MacDonald offers an explanation of chemical combination which illuminates his approach in *Gutta Percha Willie*:

> What, I ask, is the truth of water? Is it that it is formed of hydrogen and oxygen?—That the chemist has now another mode of stating the *fact* of water, will not affect my illustration. His new mode will probably be one day yet more antiquated than mine is now.—Is it for the sake of the fact that hydrogen and oxygen combined form water, that the precious thing exists? Is oxygen-and-hydrogen the divine idea of water? Or has God put the two together only that man might separate and find them out? . . . Find for us what in the constitution of the two gases makes them fit and capable to be thus honoured in

> forming the lovely thing, and you will give us a revelation about more than water, namely about the God who made oxygen and hydrogen. . . . this lovely thing itself, whose very wetness is a delight . . . I would have running through my room, yea, babbling along my table—this water is its own self, its own truth, and is therein a truth of God. (467-69)

When related to his literary works, these words reveal MacDonald's main concern—the "divine origin," sometimes dressed in symbols difficult to decode. Water proves here to be a symbol, and it carries a religious meaning in many of MacDonald's books. What he hopes for in his *Unspoken Sermons,* he carries out in his fictional works, so that in "The Carasoyn" the hero Colin diverts a little burn so that it does indeed flow through **[12]** his cottage (218-19). Willie, too, with his friend Sandy, the son of the carpenter, realises this dream of MacDonald's. After they reinstate an ancient spring the small farmhouse is able to enjoy flowing water. Willie feels that "[i]t would have been such fun" to have it "running through the house all the hot summer day." (91) and when with help from Sandy's father he constructs a room for himself in the priory ruins he does have water flowing in an open channel through the room (138-42). Next to us practical usefulness, this flowing water certainly also bears a symbolic religious significance which must now be investigated in further detail.

3. The Religious Meaning of Streams, Baths and Springs

There flowed over the Victorians a flood of unbelief—a "flood of infidelity," as Charles Kingsley calls it (*Water* 100)—called up through the discoveries in the realm of natural science. MacDonald recognised that there is a great danger in exploring individual things because in the attempt one can lose all recognition of the complexity of the creation with the Creator at its centre. His concern is expressed in a quotation from *The Miracles of Our Lord*: "The miracles are mightier far than any goings-on of nature as beheld by common eyes, dissociating them from a living Will; but the miracles are surely less than those mighty goings on of nature with God beheld at their heart" (4).

Many of MacDonald's contemporaries were concerned to renew the spiritual climate of the age. J. H. Buckley argues that the motif of a spiritual birth is connected to baptismal rites of the most varied forms: "Everywhere throughout nineteenth-century England, the virtues of water as an agent of 'purification'—in every sense of the word—were sung with strenuous

insistence" (99). Taking Kingsley's *The Water-Babies* as an exemplary children's book, Buckley shows the cleansing and regenerative effects of a symbolic baptism. Cleaned and purified, the former chimney sweep Tom emerges out of the sea and is allowed to go homewards (heavenwards) with Ellie on Sundays.

In the *Curdie* books, especially, MacDonald uses complex water symbolism, but it cannot be pursued in detail here. Princess Irene undergoes a face-washing (12), a foot-washing (64) then a cleansing and enlivening bath like Tom's (124-25). After the death of Irene and Curdie the kingdom falls. All that remains is a river meandering through the ruins of the once rich and happy country—a river such as we know from the closing parts of *The Pilgrim's Progress.* The MacDonald family's deep connection to Bunyan is mentioned by many biographers. It is thus no surprise that many of MacDonald's stories describe a pilgrim-path similar to that of Bunyan's Christian. Thus it ought not to be a surprise that *The Princess and Curdie* ends with a great river flowing through a desert of crumbling ruins.

Willie has a dream of renewing water. He sees his teacher and friend, the shoemaker Hector Macallaster, in a bed surrounded by water in one of an endless row of chambers, each with its sleeping patient surrounded by flowing water (201). From one aspect, the river flowing through the row of chambers and expressing endlessness is the river of death, beyond which lies what Bunyan calls "the celestial city." The idea of death is thus freed from all fear and Willie can bear the thought of the death of his friend without fear and anguish. When Hector first comes to know Willie he explains to the boy that only that which dies starts to live properly. Speaking of the seed sown **[13]** into the ground he tells him that: "When it dies it grows—and not till then" (53). As Bunyan says in his allegory using the words of the New Testament (Rev. 22.1): "The Water of Life springing up in us into Everlasting Life" (70). Willie's dream more powerfully calls up the image of the river of life. In MacDonald's as in Bunyan's world of imagination, the "Water of Life" witnesses to the sublimity of the goodness of God. "The Grace of God is compared to Water, for that it is which causeth fruitfulness. Water causes fruitfulness; want of Water is the cause of barrenness, and this is why the whole world is empty of Fruit to God-ward" (*Water* 9).

MacDonald uses water as a symbol for eternal life without misusing the children's book as a preaching text. At the same time, water—the primal element of which the Bible says in the creation story "darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters"

(Gen. 1.2)—also serves him to point towards the increasing spiritual dryness of modern life and the consequent need for spiritual balm. For MacDonald, as well as for Bunyan, literature offered itself alongside his sermons as a suitable medium to propagate a spiritual new birth and to contribute to the healing of humanity.

Willie decides to follow in his father's footsteps and study medicine. Yet he is not completely decided and discusses the matter with their neighbour, the parson Mr Shepherd. This name will hardly fail in its symbolic effect, and it points again to the spiritual relationship with Bunyan. Thus it is no surprise that in the discussion Willie expresses the wish also to be able to heal spiritually. Symbolically this aspect is later realised through his marriage with the parson's daughter Mona—a wedding of religion and science. Willie the physician will also heal sick souls.

4. Hydrotherapy—Medical Use of Water

As already mentioned, Willie and his friend Sandy discover in the priory ruins an ancient spring. This chalybeate spring has rejuvenating and healing powers, as it contains ingredients which prevent the iron from being in any way harmful (148). If we interpret this discovery as indicating a biblical source, then Psalm 105.41 suggests itself: "He opened the rock and the waters gushed out; they ran in the dry places like a river." But in the present section the religious component will be disregarded and attention directed to water as a source of healing.

While still at university, Willie decides to transform the priory ruins—which lie partly in the garden of his own home, Priory Leas, and partly in that of the parson—into a kind of sanatorium. (The name Priory Leas seems to be a pun on "lees"—what is left when water has drained away.) To begin with, on the basis of the long-known medicinal properties of the spring, Willie turns towards treatment based upon a drinking-cure. The success of the free treatment he gives at Priory Leas to poor people who are his patients as a student-doctor establishes the good name of the springs at the university. By the time his studies have finished "the reputation of the Prior's Well had spread on all sides, and the country people had begun to visit the Leas, and stay for a week or ten days to drink of the water" (207). Later Willie extends the facilities offered. His father comes into partnership with him and contributes his small savings. When the treatment brings in enough money they build hot and cold water baths, and install "high pressure cabins" and larger swimming pools: "They built great **[14]** baths, hot and cold, and

of all kinds—from baths where people could swim, to baths where they were only showered on by a very sharp rain" (212).

Cold baths were rediscovered in the first half of the nineteenth century, whereas the mineral-water course of treatment had been used since the Middle Ages. The popularity of both is closely connected with the Schlesian doctor Vinzenz Priessnitz (1799-1851) who opened a bathing establishment in Grafemberg (today Freiwaldau). The news of the healthy effects soon spread over the whole of Europe and modem hydrotherapy was established. Yet the fame to have discovered or rediscovered the healing strength of water actually belongs to others.

A major figure was the catholic priest, water-healer, bee-keeper, and farmer Sebastian Kneipp (1821-97). As a father-confessor of Dominican nuns he was called in 1865 to Wörishofen in the Allgäu where he was responsible, beside his pastoral duties, for the education centre and school, and for the running of the monastery. Willie can be compared in many ways with Kneipp. Both feel at home in the most different realms—are "working geniuses"—both want to help spiritually and physically. Parallels are also recognisable between MacDonald and Kneipp. Both were believers in homeopathy, both were churchmen, even though MacDonald's career as a minister came to an abrupt end. Both suffered from tuberculosis, and financial difficulties made it difficult for both to complete their studies.

Water as a healing medicine can already be found with Hippocrates (460-377 BC). Durham Dunlop describes how "Hippocrates, the father of medicine, placed Medicine on a natural and rational basis . . . and acknowledged the supremacy of Nature, and appreciated the true character of Hydropathic Agents in the treatment of disease" (81). Consequently he can not only be called the father of medicine but also the first known homeopathic physician—although it appears uncertain whether he actually described water treatments. MacDonald, although a confirmed user of homeopathy and friend of famous homeopathic doctors, is careful to have his hero Willie describe his treatments as seeming to heal—as an appropriate method of healing.

Dunlop names the first inventor of shower-baths as Asclepiades, a physician who practised around 96 BC in Rome. His preferred prescriptions were water treatments, both internal and external. Gaston Tissandier describes hydrotherapy as also being used in Rome under the reign of Augustus. Both Dunlop and Tissandier mention Antonius Musa, who gave medical advice to Augustus. He seems also to have been a consultant to Horace. Both authors

also attest to a subsequent decline in popularity of the cold-water treatment due to it having been used at every opportunity and during all the stages of illness.

The origin of warm baths is equally obscure. Using Homer's *Odyssey,* Dunlop comes to the conclusion that the beginning lies more than three thousand years ago, "for [Homer] alludes to its use in the Greek camp as an established tradition, during the Siege of Troy, or 1194 years BC" (1.15). The Greeks probably also adapted their thermal springs into great pools, providing an architectural and technological example later taken up by the Romans. The first Roman. Emperor to open a warm public bath was Nero, who ruled from AD 54-68. Roman baths were more advanced than nineteenth century ones, and were unrivalled in scale and beauty: **[15]**

> The Baths of Caracalla (around AD 220) excelled, in beauty, grandeur, and extent, those of all preceding Emperors. There were theatres, temples, extensive festive halls, schools for youth, academies for discussion, libraries . . . besides the magnificent Thermae, in which nearly 2000 persons could bathe at once." (Dunlop 128)

It is clear that MacDonald did not imagine those baths for Willie's sanatorium, yet Willie combines the heritage of the Greeks and Romans and gives all honour to Priessnitz and especially to Kneipp in the building of his healing establishments by creating a "great and admirable place" (212). His healing and bathing institute indeed resembles those of Kneipp and Priessnitz.

5. Hydraulics

Looking again at the subtitle of *Gutta Percha Willie: The Working Genius,* we will first ask wherein the geniality of Willie Macmichael consists. MacDonald allows deeds to speak for themselves. He draws the picture of a selfless young man whose parents would today experience the greatest difficulty in deciding whether in the secondary school he should specialise in science or business or languages. He paints a humorous picture of this where Willie's grandmother tries to lead him, in freedom, to decide what might be the best career for him, and every career she hints at appeals strongly to him (160-63). Willie is an all-round genius: he combines all the positive qualities of a craftsman and a designer. He understands how to construct his room in the abbey ruins which he later gives to Hector. In designing and building the healing baths he epitomises the ideal of the modern polytechnic college of

translating knowledge into practice—an ideal which can be traced back to MacDonald's mentors F. D. Maurice and A. J. Scott.

Amongst Willie's earlier creative achievements is the construction of a miniature water-wheel. We do not know whether MacDonald was very knowledgeable in the realm of hydraulics and mechanics. Willie's inventions and constructions, especially in the realm of hydraulics; however, are not only useful and relevant, but at the same time seek harmony with nature, and—as must never be left out with MacDonald—also a connection with God. What MacDonald saw in Liebig's work—scientific and technological renewal which did not discard the spiritual insights of Romanticism—is with Willie expanded to include other Romantic values. Of these it is especially the role and the valuation of the child which MacDonald emphasises. Dreams and the subconscious also play a major role in *Gutta Percha Willie*, as in all MacDonald's books.

One day, Willie's little sister Agnes wishes she could fly like a bird in the tall trees. Willie secretly starts to realise her wish by constructing a splendid tree-walkway and tree-house. (He also constructed a "flying fox" for her to fly down from the trees, but MacDonald's publisher apparently decided against this and it was clumsily deleted, leaving several now-meaningless fragments.) Willie's brotherly deed would not be so very special if he had presented his work to his sister in daylight. But he wishes to embody her wish in a dream. He climbs up the spiral stairway he has constructed with Agnes asleep in his arms. Half-asleep she imagines—as she tells it afterwards—"that an angel . . . came and took her in his arms, and flew up and up with her to a cloud . **[16]** . . made all of little birds . . . . But then it grew dark . . . and the angel flew down very fast . . . and laid her down in her crib" (188). There is admiration and devotion here before the eyes of the young child. Agnes's half-awakening high in the tree, with only the sky above, offers her, and Willie, a view into the eternity of space and a great nearness to its Creator. By realising his sister's dream of a bird's existence, through this heavenward-seeking architecture of tree house and stairways, he accomplishes Novalis's ideal of *Erhebung* (of potentising to a different metaphysical level), traditionally utilising the state between waking and sleeping—Agnes asks: "Am 1 awake? Am I dreaming?" (187).

When Willie had to wake at night in order to help his frail mother in feeding Agnes as a baby, his childlike imagination showed him "that the look of the night was what the day was dreaming" (97). So, after he has made his water-wheel he devises a complicated mechanism which enables it to

function as an alarm clock and awaken him at night. MacDonald uses one of his favourite images to express this: “the wheel was thus ever working to draw up the slide of a *camera obscura,* and let in whatever pictures might be abroad in the dreams of the day, that the watcher within might behold them” (105).

MacDonald points to the fact that what wishes to work upon the soul only finds access through the subconscious. Willie is in no way conscious of intent in the nightly hours he often spends awake: “How little would he have thought that [the water-wheel-clock’s] business was with the infinite! that it was in connection with the window of an eternal world—namely, Willie’s soul” (105). Dreaming, as an activity of the subconscious, is in him united with the conscious working of the technical imagination —”with all his practical tendencies, Willie was very fond of dreaming” (97).

The water-wheel gives witness to the significance of water for a continuously improving technology in the age of industrialisation. From the beginning of the nineteenth century, remarkable discoveries were made in the realm of mechanics and hydraulics. Up to the 1870s, water was the most common energy source in all industrial areas, even though the steam-engine was beginning to take over in England. Willie’s water-wheel is tiny and the effectiveness of a water-wheel is greatest when the speed of the wheel’s periphery is exactly that of the water which powers it. But he does not attempt to use it to drive anything. All his practical engineering is in the service of the life-giving properties of water. He has no affinity with “dull-hearted money-grubbers . . .—mill-owners, for instance, when they make the channel of a lovely mountain stream serve for a drain to carry off the filth from their works” (96).

Willie builds dams and canals-to irrigate his garden and soon “there was not a garden, even on the banks of the river, to compare with it” (95). Later, providing from the spring for all the many water-treatments for the sanatorium involves him in a great deal of complicated engineering. MacDonald in this story is continuously creating connections between the technical and the Christian sides of his imagination.

Conclusion

MacDonald endeavoured in his literary work to tackle the problems of his time in his own way, trying to convey a message which attempts to halt the accelerating decay of **[17]** values. His approach demands the unprejudiced view of the child or “the childlike.” Thus it is not surprising that

he often turns to the young, as in *Gutta Percha Willie.*

Hopefully this essay has conveyed that MacDonald, through his powers of literary imagination, made a bridge between on one side the strivings to impose an all-encompassing technological outlook upon nature, and on the other a view of the world which does not neglect the spiritual forces of the universe. The researcher, physician and soul-physician Willie Macmichael is an exemplar of MacDonald's ideal scientist.

Water unites both worlds. Not only is it crucial to the scientific and technological discoveries and developments of the Victorians, but its rich store of symbolic meanings feeds the synthesising, creative and vital activity of the imagination. The symbolic meanings are also relevant to the view MacDonald expresses in "The Fantastic Imagination" that "the greatest forces lie in the region of the uncomprehended" (319). MacDonald is no mystagogue: by this phrase he means that these regions of the imagination contain an inexhaustible potential which can only be accessed by a personality like Willie, who is open to wonder. *Gutta Percha Willie* shows how MacDonald takes living water—springs, fountains and rivers—as "a window through which we gain a momentary glimpse of a region whence all miracles appear" (*Miracles* 434).

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